Remarks/Arguments:

Claims 1 and 3 have been amended. No new material is introduced herein. Claims 2 and 5-8 are cancelled. Claims 1 and 3-4 are pending.

The title of the invention has been objected to as not being descriptive. According, a new title as been provided.

The Examiner's attention is brought to paragraph 5 of the Office Action. Lines 1-2 state that claim 1 is rejected "as being unpatentable over Ikurumi in view of Wilder", However, the remaining lines of paragraph 5 relate to Ikurumi and Mogi and to the rejection of claims 1, 3 and 4. Applicant's have thus directed their response regarding claims 1, 3 and 4 to Ikurumi and Mogi.

Claims 1, 3 and 4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ikurumi et al. (U.S. Pat. No. 6,081,613) in view of Mogi (JP-04-314258). It is respectfully submitted, however, that these claims are now patentable over the cited art for the reasons set forth below.

Claim 1, as amended, includes features neither disclosed nor suggested by the cited art, namely:

- ...a pixel-selecting section for accessing the pixels individually...
- ...a processing-computing section for...

  1) setting a plurality of image taken-in areas based on mounting data and component data...

  2) outputting pixel-selecting information for selecting pixels individually from among the pixels, based on widths of the respective image-taken-in areas...

  3) setting respective start and stop timing of the image signal...

- ...a relative-movement detector.. detecting the plurality of components moving a given distance in one direction relative to the camera by comparing position information from the relative-moving mechanism with each of the respective taken-in areas to determine whether each of the

components is within the taken-in area... providing a movement-detecting signal...

- ... a controller for controlling said pixel-selecting section based on the pixel-selecting information and outputting a pixel signal supplied from the pixel specified by the pixel-selecting information when said relative-movement detector receives the movement detecting signal

- ...the widths of the image-taken-in areas correspond to movement of the plurality of components, respectively, in the one direction relative to the camera...

- ... the camera has a scanning width that accommodates the largest component...

These features are supported by, for example, p. 1, line 24 - p. 2, line 4; p. 5, line 11- p. 14, line 26; and Figs. 1 and 8.

Ikurumi et al. disclose a camera that reads a plurality of line images of a printed circuit board and further combines the line images into an image picture of the printed circuit board (col. 5, 16-19). Ikurumi et al. do not disclose nor suggest Applicants' features of "...reading ... a plurality of components..." (emphasis added) and "... a pixel-selecting section for accessing the pixels individually ..."(emphasis added). Applicants' amended claim 1 reads an image of a plurality of components. Applicants' feature of accessing pixels individually allows an image to be read for each component using an image signal from selected pixels (for example, p. 12, lines 21-24). Ikurumi et al. disclose analyzing the mounting condition of elements after an image picture is generated and thus after the line image is formed (col. 7, lines 27-35). Ikurumi et al. do not disclose nor suggest reading an image of components on the circuit board or accessing pixels individually.

Ikurumi et al. further do not disclose nor suggest Applicants' features of "... a processing-computing section for ... 1) setting a plurality of image taken-areas based on mounting data and component data ... 2) outputting pixel-selecting information for selecting pixels individually ... based on widths of respective taken-in areas ..." (emphasis added). These features are neither disclosed nor suggested by Ikurumi et al.

Ikurumi et al. further does not disclose nor suggest "... a relative movement detector... components moving ... by comparing position information from the relative-moving mechanism with each of the respective taken-in areas to determine whether each of the components is within the taken-in area..." (emphasis added). Ikurumi et al. disclose a relative-motion detector that uses an encoder to detect the printed circuit board movement relative to the camera. However, the relative-motion detector of Ikurumi et al. do not compare position information with each of the respective taken-in areas. This feature is neither disclosed nor suggested by Ikurumi et al.

Ikurumi et al. further does not disclose nor suggest "... a controller... controlling said pixel-selecting section based on the pixel-selecting information ..." (emphasis added). This feature is neither disclosed nor suggested by Ikurumi et al.

Ikurumi et al. further does not disclose nor suggest "...the widths of the image-taken-in areas correspond to movement of the plurality of components, respectively, in the one direction relative to the camera... the camera has a scanning width that accommodates the largest component..." (emphasis added). These features are neither disclosed nor suggested by Ikurumi et al. Ikurumi et al. only disclose that the line CCD camera has an image pickup width of several thousands pixels that is enough to collectively read the lateral width of a printed circuit board (Col. 2, lines 58-62). In Ikurumi et al., a number of image sensors used in the line CCD camera needs to be equal to or greater than the width of the circuit board. In Applicants' invention, the scanning width of the camera need to accommodate the largest component. Thus Applicants' claim 1 provides an advantage over the cited art in that a size of the line sensor may be made smaller, to accommodate the largest component, rather than the size of a circuit board and thus may reduce a cost of the line sensor used. Accordingly, Ikurumi et al. do not disclose all of Applicants' claimed features.

Mogi discloses, in Fig. 1, an image scanner that uses a sensor 22 to determine a start and end of a picture read area along movement direction B based on detecting an area symbol X that is provided on a space of paper 16. The area symbol X is provided to correspond to a picture area range in the B direction. When the start of a picture is detected by sensor 22, picture element group 20 is activated corresponding to a picture read area along scanning direction A where the picture read area is

designated in advance. When the end of area symbol X is detected, the picture element group is inactivated (Abstract).

Mogi does not disclose or suggest Applicants' features of "...a processing-computing section for...1) setting a plurality of image taken-in areas based on mounting data and component data... 2) outputting pixel-selecting information for selecting pixels individually... based on widths of the respective image-taken-in areas... 3) setting respective start and stop timing of the image signal... the plurality of components moving a given distance in one direction relative to the camera... the widths of the image-taken-in areas correspond to movement of the plurality of components, respectively, in the one direction relative to the camera..." (emphasis added). Mogi does not disclose that image taken-in areas are set based on mounting data and component data. Mogi requires providing a symbol X along the picture area range in the B direction to detect the presence of the symbol. Thus in Mogi, the picture area range is not set. Rather a separate sensor is required to detect the symbol and determine the start and end of the picture area range. Mogi discloses only that the width of the picture read area along the A direction is predetermined. Mogi does not disclose or suggest that pixels are selected individually based on the widths of the taken-in areas where the widths of the taken-in areas correspond to movement direction of the components.

As shown in Applicants' Fig. 8, image taken-in area 501 of component 301 includes an X direction representing start and stop timing and a Y direction representing the width of the taken-in area. The X direction also represents movement of the components in the one direction, as shown in Applicants' Fig. 1. The pixels are selected individually based on the widths of the taken-in areas which correspond to movement in the X direction, as shown in Applicants' Fig. 8. Mogi does not disclose or suggest these features.

Mogi further does not disclose or suggest Applicants' features of "a relative-movement detector.. detecting the plurality of components moving a given distance in one direction relative to the camera by comparing position information from the relative-moving mechanism with each of the respective taken-in areas to determine whether each of the components is within the taken-in area... providing a movement-detecting signal...a controller for controlling said pixel-selecting section based on the

pixel-selecting information and outputting a pixel signal supplied from the pixel specified by the pixel-selecting information when said relative-movement detector receives the movement detecting signal ..."(emphasis added). As discussed above, Mogi uses a sensor and a symbol provided on the paper to determine the start and end of a picture area range. Mogi does not disclose or suggest detecting components by comparing position information from a relative movement mechanism with taken-in areas that are set from component and mounting data. Mogi further does not disclose or suggest that a controller outputs a pixels signal specified by pixel-selecting information when receiving a movement detecting signal. Mogi discloses only that the width of the picture read area along the A direction is predetermined. Thus, Mogi does not include Applicants' features.

Mogi further does not disclose or suggest Applicants' features of "...the camera has a scanning width that accommodates the largest component..." (emphasis added). Fig. 1 and Fig. 2 of Mogi only show that a length L for disposing picture element group 20 is larger than length L3, a possible picture read area, in the scanning direction A in order to read information in the overall area. In Mogi, a number of picture elements used in the picture element group 20 is larger than a possible picture read area. In Applicants' invention, the scanning width of the camera needs to accommodate the largest component. Thus Applicants' claim 1 provides an advantage over the cited art in that a size of the line sensor may be made smaller, to accommodate the largest component, rather than a picture read area and thus may reduce a cost of the line sensor used. Accordingly, Mogi does not disclose all of Applicants' claimed features.

Applicants' claimed features of amended claim 1 are neither disclosed nor suggested by the art of record. Accordingly, allowance of amended claim 1 is respectfully requested.

Claim 3 has been amended. Support for the amended features are disclosed, for example, p. 7, line 24 -p. 8, line 18 and Figs. 4 and 5. Amended claim 3 includes all of the features of claim 1 from which it depends. Thus, claim 3 is also patentable over the art of record.

Independent amended claim 4 recites features similar to amended claim 1. Again, these features are neither disclosed nor suggested by the art of record. Accordingly, independent amended claim 4 is also patentable over the art of record.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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